

Grade: 5

Title: Ecosystems and Swamps

Heidi Williams

Student Learning Objective(s):

- The students will learn basic information about wetlands/swamps.
- The students will be able to identify some of the plants and animals that live in a swamp and how they have adapted to their swamp habitat.
- The students will create their own food chains based on various species located in saltwater swamps.
- The students will create a board game to teach other students about swamps.

LA GLE's

Grade: 5 # 23: Construct food chains that could be found in ponds, marshes, oceans, forests, or meadows (LS-M-C2)

Grade: 5 # 24: Describe the roles of producers, consumers, and decomposers in a food chain (LS-M-C2)

Grade: 5 # 25: Compare food chains and food webs (LS-M-C2)

Grade: 5: # 26: Identify and describe ecosystems of local importance (LS-M-C3)

Materials needed:

- Learning Logs
- Examples of Louisiana Swamps
- 22 Pictures of various Louisiana swamp species.
 - **Each picture was extracted from the following website:**
Guchereau, Walter. (2005). Lafayette and Breau Bridge Swamp Tour. Retrieved April 18, 2009 from http://www.cajuncountryswamptours.com/html/photo_gallery.html
- Example of a food chain.
- Different color paper for the students to write their research on.

Detailed Procedure. *Describe what the students will do in each stage. Include guiding questions you might ask to help students.*

1. Engage:

Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*

- | | | | | | | |
|--|--|---|---|-------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Observation | <input type="checkbox"/> Classification | <input checked="" type="checkbox"/> Communication | <input type="checkbox"/> Measurement | <input type="checkbox"/> Estimation | <input type="checkbox"/> Prediction | <input type="checkbox"/> Inference |
| <input type="checkbox"/> Identifying Variables | <input type="checkbox"/> Controlling Variables | <input type="checkbox"/> Defining Operationally | <input type="checkbox"/> Forming Hypotheses | | | |
| <input type="checkbox"/> Experimenting | <input type="checkbox"/> Graphing | <input type="checkbox"/> Modeling | | | | |

1. Does everybody know what a wetland is? **Some say yes and others say no.**
2. What do you think of when you hear the word wetland? **Answers will vary.**
3. So a wetland is an area in which water is present at least part of the time. Scientists classify wetlands in two major ways: saltwater and freshwater. Can anyone tell me the difference between the two?
Accept all possible answers.
4. Can anyone give me some examples of saltwater and freshwater wetlands that exist in our state?
Answers will vary. (Bogs, tidal flats, mangrove swamps, marshes, swamps, vernal pools, etc...)
5. Has anyone ever visited a marsh, swamp, or bog, or have ever watched tadpoles swim in small puddles? **Answers will vary.**
6. Today class we're going to be learning about freshwater swamps. I would like a volunteer to give me some characteristics that makeup a freshwater swamp. **Answers will vary. (Lots of shrubby, standing water, special soils and plants, alligators, snakes, etc...)**
7. [The teacher will write all answers on the dry erase board and discuss their answers as a class].
(*These questions are an assessment to see if the children are familiar with wetlands and swamps.)

2. Explore:

Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*

- | | | | | | | |
|---|--|---|---|-------------------------------------|-------------------------------------|------------------------------------|
| <input checked="" type="checkbox"/> Observation | <input type="checkbox"/> Classification | <input checked="" type="checkbox"/> Communication | <input type="checkbox"/> Measurement | <input type="checkbox"/> Estimation | <input type="checkbox"/> Prediction | <input type="checkbox"/> Inference |
| <input type="checkbox"/> Identifying Variables | <input type="checkbox"/> Controlling Variables | <input type="checkbox"/> Defining Operationally | <input type="checkbox"/> Forming Hypotheses | | | |

☐ Experimenting

☐ Graphing

☐ Modeling

1. The students will be divided into five subgroups.
2. The teacher will hand out to each group various pictures of species that exist in swamps (**Alligators, Cypress Tress, Tupelo Gum, Water Hyacinth, Spanish moss, Nutria, Grass Shrimp, Swamp Algae, etc...**)
3. The students will observe and discuss in groups the relevance or importance of various species located in the swamps.
 - **Why do you think the Cypress and Tupelo Gum Tress are the key species in Louisiana Swamps?**
 - **How do you think the Water Hyacinth aids in the building of Louisiana Swamps?**
 - **What do Grass Shrimp Eat?**
 - **What is Nutria? Do you think they protect or destroy the Louisiana swamps?**
4. The teacher will then discuss the concept of a food chain.
 - What is a food chain? **Answers will vary. (The flow of energy from one organism to the next and to the next and so on. Mention how food chains have different trophic levels and producers/consumers).**
 - What makes up a food chain? What makes up our (human) food chain? **Answers will vary.**
5. The teacher will then discuss the different Trophic levels that are within a food chain.
6. The students will then be required to create a food chain in their groups, of the different species of animals lying on their table.
***The food chains will be decoratively colored and made so they can be hung in the classroom on a large poster board.**

3. Explain:

Outline the line of questioning you will use to assist students in understanding the concept. List at least 5 good questions and identify the question category (Gallagher & Aschner) in which your question falls (see text, Figure 7.6).

1. Compare your species with a species presented by your fellow classmates. **Answers will vary depending on which group they chose to compare with.**
2. Discuss some characteristics of your species and how it is connected to the swamps. **Answers will vary. Some may say that their species is the main ingredient of a Louisiana swamp (i.e. Cypress). Certain animals are links for energy transfer between trophic levels. (Listen for important things said by the students involving the characteristics of swamp species.)**
3. Identify reasons why your species exist in the swamps. **Answers will vary depending on the type of species.**
4. What do you think will happen to your species if the Louisiana swamps keep deteriorating? **Answers will vary. Plants will no longer exist, alligators will find other areas to live, animals will find different habitats to live in, other animals might become extinct, etc...**
5. What can you do to keep your neighboring swamp intact? **Answers will vary. Some children may say do not disturb the swamps.**

4. Expand:

Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*

<input type="checkbox"/> Observation	<input type="checkbox"/> Classification	<input checked="" type="checkbox"/> Communication	<input type="checkbox"/> Measurement	<input type="checkbox"/> Estimation	<input type="checkbox"/> Prediction	<input type="checkbox"/> Inference
<input type="checkbox"/> Identifying Variables	<input type="checkbox"/> Controlling Variables			<input type="checkbox"/> Defining Operationally	<input type="checkbox"/> Forming Hypotheses	
<input type="checkbox"/> Experimenting	<input type="checkbox"/> Graphing			<input type="checkbox"/> Modeling		

1. The students will chose one species from their table and research information on it using the resources provided by the teacher.

***Various books from LSU library will be provided ranging from Spanish Moss and Cypress to Nutria and Bass.**

Arnosky, Jim. (1994). *All About Alligators*. New York, New York: Scholastic Inc.

Barrett-O'Leary, Marilyn. (2002). *OH NO! Hannah's Swamp is Changing*. Baton Rouge, Louisiana: Louisiana Sea Grant College Program.

Beatty, Richard. (2002). *Biomes Atlases: Wetlands*. Austin, Texas: Raintree Steck-Vaughn Publishers.

Bredeson, Carmen. (2008). *Fun Facts About Alligators*. Berkley Heights, New Jersey: Enslow Publishers, Inc.

Greenaway, Theresa. (1993). *Swamp Life*. New York, New York: Dorling Kindersley, Inc.

Johansson, Philip. (2008). *Marshes and Swamps: A Wetland Web of Life*. Berkley Heights, New Jersey: Enslow Publishers, Inc.

Johnson, Rebecca, L. (2004). *A Journey into a Wetland*. Minneapolis, Minnesota: Carolrhoda Books, Inc.

Lammert, John. (1992). *Science Fair: How to do a Successful Project with Plants*. Vero Beach, Florida: Rourke Publications, Inc.

Parker, Bertha. (1955). *Spiders*. Evanston, Illinois: Row, Peterson and Company.

Parker, Steve. (1988). *Pond & River*. New York, New York: Alfred A Knopf, Inc.

Potts, Steve. (1998). *The American Alligator*. Mankato, Minnesota: Capstone Press.

Simon, Seymour. (1992). *Snakes*. United States: HarperCollinsPublishers.

Simon, Seymour. (2007). *Spiders*. New York, New York: HarperCollinsPublishers.

Stone, Lynn. (1989). *Alligators and Crocodiles*. United States: Childrens Press, Inc.

Stone, Lynn. (1990). *Crocodiles*. Vero Beach, Florida: Rourke Corporation, Inc.

2. The students will be searching for the answers to the following questions on their species:

- ***What is your swamp species?***
- ***What is the lifespan of the species?***
- ***According to your food chain, what trophic level is the species placed in?***
- ***Is it a producer or consumer? And what does it feed on?***
- ***Does it protect or destroy the swamp? In what way?***
- ***Is it in danger? If so, what do you suggest to do to protect it?***

3. The students will then paste their findings to the picture of their species.

4. Each group will present their research on their species to the class.

5. Evaluate:

What exactly will you do, or what evidence/data will you collect, to ascertain whether the students can achieve the objectives you listed at the top of the lesson?

1. During the activity, the teacher will ask probing questions to illicit both prior and subsequent knowledge of the students understanding of wetlands/swamps and food chains.
2. The teacher will look at the student's research on their swamp species.
3. The students will be assessed as they answer the questions during the explain phase of the lesson.
4. The students will be assessed as they explain the details about their species. The teacher will determine if they are considering all the factors of their species.

Brain Compatible Learning Strategies Used in This Lesson:

- | | | | | |
|--|---|--|--|---|
| <input checked="" type="checkbox"/> Brainstorming/Discussion | <input checked="" type="checkbox"/> Drawing and Artwork | <input type="checkbox"/> Field Trips | <input type="checkbox"/> Games | <input type="checkbox"/> Graphic Organizers |
| <input type="checkbox"/> Humor | <input type="checkbox"/> Manipulatives, Experiments, Labs, Models | <input type="checkbox"/> Metaphors, Analogies, and Similes | | |
| <input type="checkbox"/> Mnemonic Devices | <input type="checkbox"/> Movement | <input type="checkbox"/> Music, Rhythm, Rhyme, and Rap | <input type="checkbox"/> Project/Problem-Based Instruction | |
| <input type="checkbox"/> Reciprocal Teaching, Cooperative Learning | <input type="checkbox"/> Role Plays, Drama, Pantomimes | <input type="checkbox"/> Storytelling | | |
| <input type="checkbox"/> Technology (student use) | <input type="checkbox"/> Visualization/Guided Imagery | <input checked="" type="checkbox"/> Visuals | <input checked="" type="checkbox"/> Writing/Journals | |

Lesson Source:

Guchereau, Walter. (2005). *Lafayette and Breaux Bridge Swamp Tour*. Retrieved April 18, 2009 from <http://www.cajuncountryswamptours.com/index.html>

Weaver, J.E. and L.F. Hollaway. (1974). *Community structure of fishes and macro crustaceans in ponds of a Louisiana tidal marsh influenced by weirs*. Contrib. Mar. Sci. 18:57-69.

Anderson, G. (1985). *Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Gulf of Mexico) -- Grass Shrimp*. U.S. Fish and Wildlife Service Biol. Rep. 82(11.35). 19 pp.

Enchanted Learning. (2006-2009). *Food Chains and Food Webs; "What's for dinner?"* Retrieved April 18, 2009 from <http://www.enchantedlearning.com/subjects/foodchain/>

Compucast Web design. (2005). *Westwego Swamp Adventures: Authentic New Orleans Swamp Tours*. Retrieved April 18, 2009 from <https://secure.compucast.com/westwego/market/marketwego.html>



Tupelo Gum: “Swamp Tree”



Tupelo Gum: “Swamp Tree”



Tupelo Gum: “Swamp Tree”



Louisiana Bald Cypress



Cypress Stumps



Spanish Moss



Spanish Moss



Nutria



Wolf Spider



American Alligator



Great Blue Heron



Louisiana Iris



Water Hyacinth



Pig Frog



American Alligator



Bass



Grass Shrimp



Raccoon

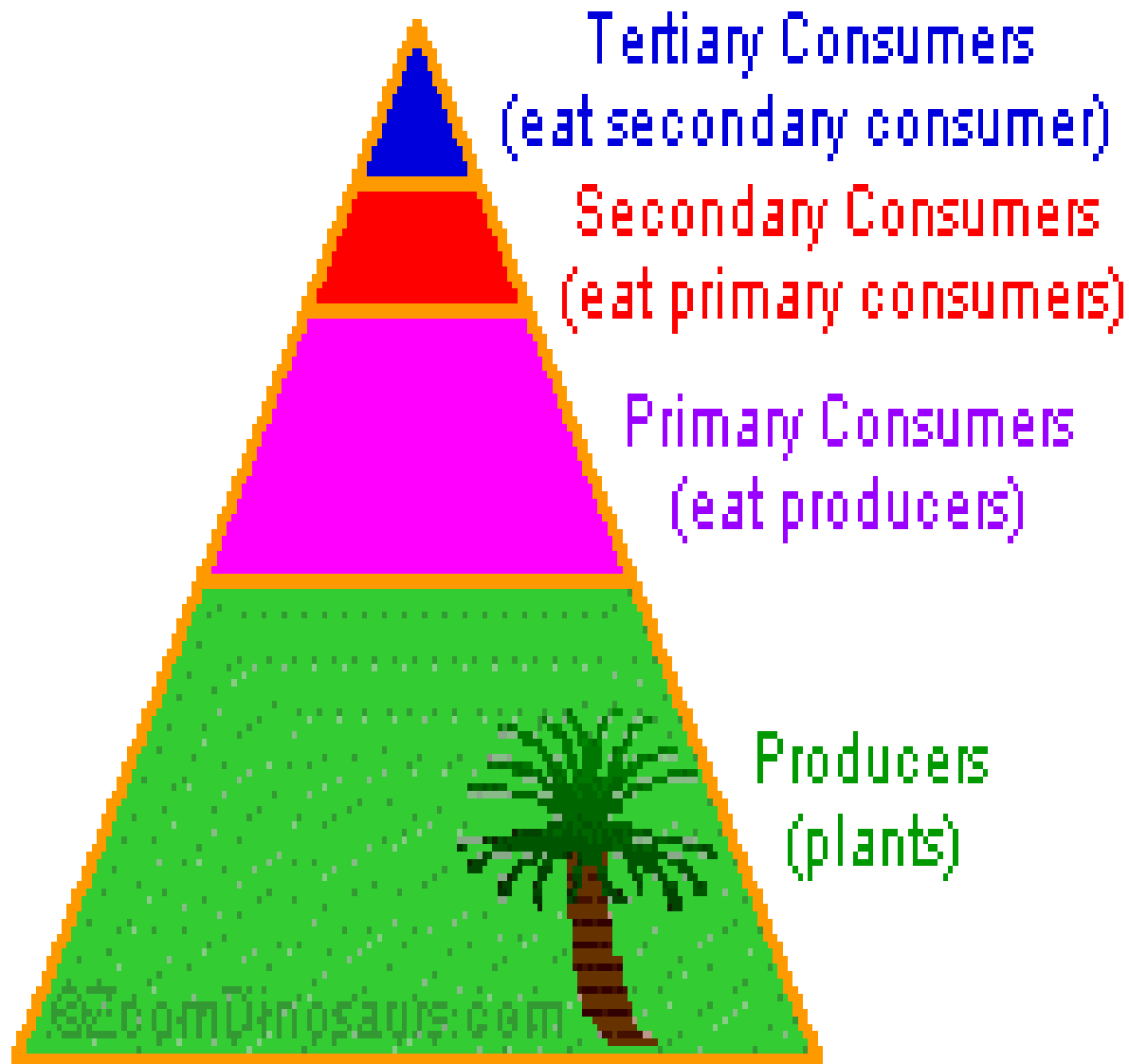


Louisiana Swamp Algae



Cricket

The Food Web



Sample Food Chains

Trophic Level	Grassland Biome	Pond Biome	Ocean Biome
Primary Producer	grass ↓	algae ↓	phytoplankton ↓
Primary Consumer	grasshopper ↓	mosquito larva ↓	zooplankton ↓
Secondary Consumer	rat ↓	dragonfly larva ↓	fish ↓
Tertiary Consumer	snake ↓	fish ↓	seal ↓
Quaternary Consumer	hawk	raccoon	white shark

©EnchantedLearning.com

Autotrophs or Primary Producers: Photosynthetic plants and bacteria that makes its own food.

Herbivores or Primary Consumers: Organisms that eat the autotrophs; (a rabbit that eats grass.)

Secondary Consumers: Animals that eat herbivores (organisms that eat mainly plants; a snake that eats a rabbit). In turn, these animals are eaten by larger predators – (An owl that eats a snake).

Tertiary Consumers: eaten by **Quaternary Consumers:** (a hawk that eats an owl).

- Each food chain ends with a **Top Predator**, an animal with **NO** natural enemies (like an alligator, hawk, or polar bear).
- Arrows show the flow of energy, from the sun to the top of a predator.
- As the energy flows from organism to organism, energy is lost at each step.